IUCN Conservation Outlook Assessment 2014 **(archived)**
Finalised on 15 June 2014

Please note: this is an archived Conservation Outlook Assessment for Mosi-oa-Tunya / Victoria Falls. To access the most up-to-date Conservation Outlook Assessment for this site, please visit https://www.worldheritageoutlook.iucn.org.

Mosi-oa-Tunya / Victoria Falls

SITE INFORMATION

Country:
Zambia, Zimbabwe
Inscribed in: 1989
Criteria:
(vii) (viii)

Site description:
These are among the most spectacular waterfalls in the world. The Zambezi River, which is more than 2 km wide at this point, plunges noisily down a series of basalt gorges and raises an iridescent mist that can be seen more than 20 km away. © UNESCO

SUMMARY

2014 Conservation Outlook

Good with some concerns

The Mosi-oa-tunya / Victoria Falls is one of Africa’s greatest natural spectacles and already receives a correspondingly large number of visitors from around the world. Compared with similar sites elsewhere in the world, the Mosi-au-tunya / Victoria Falls park complex retains its sense of nature’s raw power, its aesthetic values and wilderness qualities remarkably well. The immediate vicinity of the falls is protected within three adjoining national parks which ensure that visitors can appreciate its natural values in a pristine, un-spoilt setting. These remarkable qualities, which distinguish this site from some of the world’s other major waterfalls, will be challenged as visitor numbers and development pressures increase. Effective regulation and control of tourism development pressures, especially the development of physical infrastructure too close to the falls, will be the single greatest challenge for site managers.

Current state and trend of VALUES

Low Concern
Trend: Stable

The aesthetic values of this spectacular natural wonder are being maintained despite increasing tourism development pressures. There has been some recent deterioration in aesthetic values due to infrastructure developments in and around the property, and an increase in the numbers of noisy aircraft over-flying the falls. On the other hand there has been an improvement in dry-season water flows over the falls due to voluntary reductions by the Zambian power company, ZESCO in the amount of water abstracted for power generation at critical times. The ongoing geological processes have not been significantly altered and are considered essentially intact.

Overall THREATS

High Threat

The aesthetic values of this great natural wonder are threatened by the need to provide infrastructure and services to increasing numbers of visitors. To date, tourism development has been effectively regulated and the most potentially damaging developments have been stopped at the planning stage. There is need for continued vigilance to ensure that the quality of the visitor experience is maintained by protecting the spectacular views, reducing noise and water pollution and avoiding overcrowding. Significant further threats include the spread of invasive alien species, the impacts of fire on remnant forests, poaching, and local use of resources within the property. Abstraction of water by a hydro-electric power station is a critical factor during low-flow months, diverting at least half the water from the falls for 3-4 months each year. Irrigation schemes in Botswana, which would abstract an additional 495 million cubic meters of water per annum, representing 5-10% of dry season flow at the falls, could potentially have a negative impact on the property’s OUV.

Overall PROTECTION and MANAGEMENT

Some Concern

Protection and management programmes are severely constrained by budget and staffing limitations. Tourism revenues do not appear to be retained and re-invested at the site. Despite a series of thorough (donor-funded) reviews of strategic management needs initiated in 1996, implementation of protection measures has been weak and haphazard with poor co-ordination between the two State Parties and other agencies. Things have improved since the development of a Joint Integrated Management Plan in 2007, but there is still a long way to go. There appears to be limited influence by site management authorities over threats from outside the site which include leakage of municipal sewage into the property, unplanned urban development close to the boundaries and use of the road and railway corridor through the property

FULL ASSESSMENT

Description of values

Values

World Heritage values

▶ **Spectacular waterfall in pristine natural setting**
Criterion:(vii)

One of the most spectacular waterfalls in the world, where the mighty Zambezi plunges over a sheer precipice almost two kilometers wide and falls 108 metres into a series of spectacular gorges. At peak flow, this is the world's largest curtain of falling water, creating a plume of spray that rises 500 m into the air and can be seen 20 km away. The continuous spray provides sufficient water to maintain a strip of rainforest on the cliff-tops opposite the falls, and the pristine natural beauty of the place owes much to the riverine environment on either side of the falls. Above the falls the Zambezi flows relatively slowly, creating a series of wide channels and islands, with woodlands along its banks inhabited by a diversity of typical African megafauna – elephants, buffalo, giraffe, zebra and the like. Below the falls, the river plunges through a zig-zag series of sheer basalt gorges (UNEP-WCMC,2012; SoOUV, 2012).

▶ **Ongoing geological process**
Criterion:(viii)

The falls represent a stage in a geological process that has been ongoing for some two million years, involving the Zambezi River cutting through east-west fissures in the basalt plateau, forming a series of retreating falls. The zig-zag series of gorges below the present falls testify to the location of seven previous waterfalls, and the Devil's Cataract (at the western end of the

present falls) represents the start of the cutting back to an eighth location. The gorge system below the falls continues for some 110 km, with 16 km of this included within the world heritage property (UNEP-WCMC, 2012; SoOUV, 2012).

Other important biodiversity values

▶ **Rare cliff-nesting birds**

The world heritage site forms part of two Birdlife IBAs covering either side the Batoka Gorge (IBA Factsheets, 2012). The Gorges below the falls are important breeding sites for a number of cliff-nesting species, including the near-threatened Taita falcon (Falco fasciinucha).

Assessment information

Threats

Current Threats

Low Threat

The main current threats are related to the development of inappropriate tourism facilities and services in and around the property. These are progressively eroding the site’s pristine natural wilderness qualities, spoiling the views of the falls and its surroundings with intrusive infrastructure and creating noise and water pollution. Abstraction of water by a hydro-electric power station is a critical factor during low-flow months, diverting at least half the water from the falls for 3-4 months each year. A major rail and road corridor passes through the middle of the property, crossing the gorge just below the falls. Significant further threats include the spread of invasive alien species, the impacts of fire on remnant forests, poaching, and local use of resources within the property.

► Housing/ Urban Areas

Data Deficient
Inside site
Outside site

There are several hotels, restaurants, visitor centres, camps, boat moorings and other tourism facilities within the property (UNEP-WCMC, 2012), and a controversial new 160-room 5-star hotel and conference facility within the property was at an advanced stage of planning in 2006 (Mission Report 2006). A tethered balloon project was also under consideration at the same time. A short-term moratorium on such developments was imposed in 2007, but had been lifted by 2008 (SOC Report, 2008), and there is little subsequent information on proposed new developments.

► Tourism/ visitors/ recreation

Low Threat
Inside site
Outside site

The park has become a centre for ‘extreme sports’ with white-water rafting, bungee-jumping, abseiling and a gorge swing all in operation (UNEP-WCMC, 2012). As many as 40 river cruise boats operate from the Zimbabwean shore above the falls (Mission Report, 2006), and there are jet-boats, micro-light aircraft and helicopters in constant use. Many of these activities are noisy and impinge on the aesthetic values of the property (Mission Report 2006).

► Commercial/ Industrial Areas

High Threat
Outside site

Two telephone towers, the roofs of hotels and other developments on the Zambian side of the river can be seen from vantage points in Zimbabwe, impinging on the visual integrity of the site (SOC Report, 2010). The Zambian authorities are re-considering a tethered balloon project (SP Report, 2012), despite earlier recommendations that such a project would affect the visual integrity of the site (Mission Report 2006)

► Dams/ Water Management or Use

High Threat

Inside site

A 60MW hydro-electric power station on the Zambian side of the falls requires 175 m3/s to operate at full capacity, representing a significant proportion of the Zambezi's total flow during the drier months (flow rates below 400m3/s are usual from early September to mid-December)(SP Report, 2012).

► Other Activities

Low Threat
Inside site

The noise of helicopters and micro-light aircraft carrying visitors to view the falls, as well as motorized cruise vessels on the Zambezi above the falls, is a constant nuisance, compromising the wilderness qualities of the site and its aesthetic value. Twenty boats and nine helicopters were reported to be operating at the site from 2007 (SOC report, 2010).

► Household Sewage/ Urban Waste Water

Low Threat
Inside site

Tourist and municipal wastes, including sewage, are polluting both land and water (UNEP-WCMC, 2012). The main sewage ponds for the municipality of Livingstone require rehabilitation and are leaking untreated sewage into the property (SP report, 2012). The power station complex within the property is reported to collect and dispose of all domestic and facility wastes (including oil) outside the property, but there is clearly a risk of leakages (SP report, 2012).

► Roads/ Railroads

Low Threat

The site is bisected by a road and rail transport corridor which crosses the gorge immediately below the falls over the spectacular Falls Bridge. Associated with this corridor is an unsightly collection of fences and buildings, including the Zambian customs and immigration services (UNEP-WCMC, 2012). Further infrastructure within the site includes the power station and its ancillary buildings

► Subsistence hunting

Data Deficient
Inside site
Outside site

Poaching is an ongoing threat (SP report, 2012).

► Invasive Non-Native/ Alien Species

High Threat
Inside site

Lantana camara is spreading aggressively and has colonized the cliff faces in the gorges (SP Report, 2012). Water hyacinth is also present and may be obstructing water channels above the falls.

► Fire/ Fire Suppression

Data Deficient
Inside site
Outside site

Fire is destroying vulnerable forest habitats and preventing forest regeneration in some areas (UNEP-WCMC, 2012).

► Droughts

Data Deficient
Inside site
Outside site

Severe drought in 2001/2 decimated the park’s fauna (UNEP-WCMC, 2012).

► Livestock Farming / Grazing

Data Deficient
Inside site

Reported to be well established within the property (UNEP-WCMC, 2012), but no further information is available.

► Housing/ Urban Areas

High Threat

Outside site

The population and infrastructure of the towns of Victoria Falls (Zimbabwe) and Livingstone (Zambia), bordering the property, are expanding rapidly without adequate planning (SP report, 2012).

Potential Threats

High Threat

Visitor numbers are likely to grow dramatically, creating enormous challenges to ensure proper regulation of infrastructure development and service provision. Any major use or abstraction of water from the upstream catchment area would clearly have an impact on the spectacle of the falls, particularly during the dry season. Irrigation schemes in Botswana, which would abstract an additional 495 million cubic meters of water per annum, representing 5-10% of dry season flow at the falls, could potentially have a negative impact on the property’s OUV. A possible new dam in the Batoka Gorge would flood parts of the property below the falls, affecting rare cliff-nesting birds such as the Taita falcon.

► Tourism/ visitors/ recreation

Very High Threat
Inside site
Outside site

Increasing the number of visitors to the falls is a key government policy on both sides of the border, but there are concerns over the visitor carrying capacity (Mission Report 2006, SOC Report 2007; SP Report 2012). Over the past five years numbers have varied between 220,000 to 350,000 per annum (SP Report 2012).

► Dams/ Water Management or Use

Low Threat
Inside site

A 196m-high dam proposed for the Batoka Gorge would create a 50km-long lake and flood several of the gorges in the park, destroying the habitat of cliff-nesting birds (UNEP-WCMC, 2012).

► Dams/ Water Management or Use

Data Deficient
Inside site

The Zambezi catchment covers a large part of western Zambia and south-west Angola, much of which may be suitable for irrigation, leading to water abstraction. Irrigation schemes in Botswana, which would abstract an additional 495 million cubic meters of water per annum, representing 5-10% of dry season flow at the falls, could potentially have a negative impact on the property's OUV (SOC report, 2014).

Protection and management

Assessing Protection and Management

► Relationships with local people

Data Deficient

Many of the economic benefits derived from the property accrue to local people employed in tourism-related services and activities outside the site. No specific outreach programme is known.

► Legal framework and enforcement

Data Deficient

Protection of the site is provided under Zimbabwe's Parks and Wildlife Act, National Museums and Monuments Act, Environmental Management Act, Tourism Act and Forestry Act. In Zambia the National Heritage Conservation Act and the Wildlife Act are used. The legal framework appears to be adequate, but infringements are reported in a number of areas including poaching and cattle herding inside the parks, and difficulties over enforcement of municipal pollution control (Mission Report 2006).

► Integration into regional and national planning systems

Some Concern

Various initiatives have been undertaken to foster effective management

integration at different administrative levels, but none of these has been fully implemented. A detailed Strategic Environmental Assessment (SEA) was carried out in 1996 to consider integrated development planning within a radius of 30km of the falls, recommending agency coordination within this zone through development of Combination Area Plans. This has not happened. A bilateral workshop was held to discuss issues and develop recommendations for effective management of the property in 2002, but the Committee was still urging implementation of its recommendations at its Session in 2007. A much larger area (including the World Heritage site) is covered by a KAZA Trans Frontier Conservation Area Agreement between the five countries which share common borders upstream of the falls, but the benefits of this cooperation are not yet clear (Mission Report 2006).

► Management system

Some Concern

The World Heritage site comprises parts of three adjoining national parks, with the remainder of these three parks serving as a buffer zone. The management plans for the three parks have all expired and are no longer followed (Mission Report, 2006). A new Joint Integrated Management Plan for the world heritage property was developed and approved by both State Parties in November 2007 (SOC, 2008), and Joint Ministerial, Technical and Site Management Committees have been established and have developed joint annual action plans for 2010 and 2011 (SP report, 2012)

► Management effectiveness

Serious Concern

Management is severely constrained by budget and staffing inadequacies. There is reported to be high staff turnover, prolonged staff vacancies and ‘economic meltdown’ in one State Party. Progress in implementing the 2010 joint action plan appears extremely limited, and no attempt was made to report against specific targets for the 2011 year (SP report 2012).

► Implementation of Committee decisions and recommendations

Some Concern

Although implementation is often slow, key Committee decisions and recommendations have generally been addressed to some extent. Following

the 2006 mission and subsequent Committee Decisions at 31.COM (2007), the State Parties developed and approved a Joint Integrated Management Plan (JIMP), imposed a moratorium on tourism infrastructure development and made some progress in eradicating exotic vegetation, controlling pollution and reducing water abstraction for power generation. Significant gaps remain, however in securing funds for implementation of the JIMP; the moratorium on tourism infrastructure development has been lifted; and the Zambian authorities are reported to be reconsidering a project for a tethered balloon which would impact on the property (and runs contrary to the Committee's Decision at 34.COM (2010). A comprehensive site monitoring programme, as recommended by the 2006 mission and included in the Committees Decision at 34.COM (2010) is yet to be developed.

► Boundaries

Some Concern

The site is relatively long and narrow with a high boundary:area ratio. Incursions by poachers, cattle keepers and even cultivators are reported (SP report 2012, UNEP-WCMC, 2012). The property is buffered by the surrounding national parks and protected areas enabling the persistence of a much more diverse large mammal fauna than could be sustained if the property were managed in isolation.

► Sustainable finance

Serious Concern

There is no information on budget allocations, but they are clearly inadequate. Nevertheless, there would appear to be considerable scope for self-financing from park entry fees and other retained revenues if a proper pricing and revenue retention scheme were developed as part of a sustainable financing strategy.

► Staff training and development

Data Deficient

Serious staffing problems have been reported, including high staff turnover, 'brain drain', political appointments, and prolonged staff vacancies (SP report, 2012). Training appears to be undertaken on an ad hoc basis, primarily when donor funding is available. In 2001-2 the World Heritage Fund

allocated US$94,500 to increase management capacity through staff training. During the 2010-12 reporting period, 44 field rangers were trained in field data collection and anti-poaching activities

► Sustainable use

Serious Concern

The main uses of the property are hydro-electric power generation and tourism. The critical issue is water abstraction by the power station during the dry season when river flow rates are low and the amount required is often more than half the total. An arbitrary decision to limit water abstraction for five hours daily during the dry season, aimed at allowing water to pass over the western cataract during peak visitor hours, has been taken (SP report, 2012). Regarding visitor carrying capacity, an attempt has been made to establish an upper limit (6,000 visitors/day, SP report, 2012), but this is based on questionable assumptions such as a one-hour duration for each visit.

► Education and interpretation programs

Data Deficient

There are visitor interpretation centres on both sides of the property, but these were considered ‘very basic and poor’ by the 2006 mission (Mission report 2006). The one on the Zambian side was focused on early settlement in the area, rather than the values of the World Heritage site. Subsequently, both visitor centres have been upgraded, and the one on the Zimbabwe side now showcases the Outstanding Universal Values of the property (SP report, 2012). There are no data distinguishing between citizens and foreign visitors, but it appears that at least on the Zambian side, citizens outnumber foreign visitors (UNEP-WCMC, 2012). There is no information on the nature of any educational programmes that may be offered to school groups or other citizen visitors.

► Tourism and interpretation

Some Concern

This is one of the most intensively visited sites in Africa, with recent annual visitor totals varying between 351,646 (2007) and 218,926 (2009), with roughly equal numbers visiting either side of the international border. The

site is a major focus of each State Party's tourism development policy, and the primary economic driver for the adjacent towns and regions. The sustainable management of tourism has been the primary focus of the 1996 SEA, the 2002 bilateral workshop recommendations and the 2007 Joint Integrated Management Plan, but there is no specific tourism plan for the site.

► Monitoring

Serious Concern

Site monitoring is weak. Some monitoring benchmarks and indicators have been identified (SP report 2012), but a comprehensive programme is needed

► Research

Data Deficient

No formal research programme is known. A few specific research needs are identified in the list of 'benchmarks and indicators' developed by the State Parties (SP report, 2012), including research on noise pollution from aircraft, and eradication of the invasive weed, Lantana camara

Overall assessment of protection and management

Some Concern

Protection and management programmes are severely constrained by budget and staffing limitations. Tourism revenues do not appear to be retained and re-invested at the site. Despite a series of thorough (donor-funded) reviews of strategic management needs initiated in 1996, implementation of protection measures has been weak and haphazard with poor co-ordination between the two State Parties and other agencies. Things have improved since the development of a Joint Integrated Management Plan in 2007, but there is still a long way to go. There appears to be limited influence by site management authorities over threats from outside the site which include leakage of municipal sewage into the property, unplanned urban development close to the boundaries and use of the road and railway corridor through the property

► Assessment of the effectiveness of protection and management in

addressing threats outside the site

Some Concern

There appears to be limited influence by site management authorities over threats from outside the site which include leakage of municipal sewage into the property, unplanned urban development close to the boundaries and use of the road and railway corridor through the property

State and trend of values

Assessing the current state and trend of values

World Heritage values

► Spectacular waterfall in pristine natural setting

Low Concern
Trend:Stable

The falls and their immediate environment remain essentially intact, but there are concerns over reduced flows over the falls at critical times of year due to continued abstraction of water for hydro-electric power generation (which diverts about half the available water for 3-4 months); and concerns over loss of wilderness values due to inappropriate tourism developments. These include construction of hotels and lodges on the riverbanks; spoiling the visual integrity of the property with tall structures nearby; noise pollution, especially from light aircraft, and motor boats; and expanding urban settlements adjoining the property (Mission Report 2006)

► Ongoing geological process

Good
Trend:Stable

The erosive forces of the river and ongoing geological processes have not been significantly altered and are considered essentially intact.

Other important biodiversity values

▶ **Rare cliff-nesting birds**

The world heritage site forms part of two Birdlife IBAs covering either side the Batoka Gorge (IBA Factsheets, 2012). The Gorges below the falls are important breeding sites for a number of cliff-nesting species, including the near-threatened Taita falcon (Falco fasciinucha).

Summary of the Values

▶ **Assessment of the current state and trend of World Heritage values**
Low Concern
Trend: Stable

The aesthetic values of this spectacular natural wonder are being maintained despite increasing tourism development pressures. There has been some recent deterioration in aesthetic values due to infrastructure developments in and around the property, and an increase in the numbers of noisy aircraft over-flying the falls. On the other hand there has been an improvement in dry-season water flows over the falls due to voluntary reductions by the Zambian power company, ZESCO in the amount of water abstracted for power generation at critical times. The ongoing geological processes have not been significantly altered and are considered essentially intact.

Additional information

Key conservation issues

▶ **Funding for management**
National

Secure funding to implement the newly-developed Joint Integrated Management Plan, preferably from sustainable self-financing sources such as park entry fees. This may require a pricing study and development of a detailed business plan for the property, as well as necessary changes in policy

towards use of retained revenues by park authorities

▶ Trans-frontier collaboration

Regional

Further strengthen trans-frontier co-operation in the management of the property, particularly over the development of binding agreements to ensure protection of the riverbanks, islands and surroundings of the park against any form of infrastructure development (hotels, telephone towers, tall buildings, tethered balloons and the like) that could be visible from the falls or river.

▶ Water abstraction

National

Institute measures to reduce progressively the amount of water used for hydro-electric power generation during the low-flow months, so that the limited amount of available water can be allowed to pass over the falls for the benefit of visitors, at least during daylight hours.

Projects

Compilation of active conservation projects

№	Organization/ individuals	Project duration	Brief description of Active Projects
1	African Wildlife Foundation		Zambezi Heartland
2	Angola, Botswana, Namibia, Zambia, Zimbabwe		KAZA Trans Frontier Conservancy Area

REFERENCES

№	References
1	IBA Factsheet (2012). Zambia’s Mosi-oa-tunya and Batoka Gorge
2	IBA Factsheet. (2012). Zimbabwe’s Batoka Gorge
3	IUCN/UNESCO Mission Report, 2006
4	SOC Report, 2007
5	SOC Report, 2008
6	SoOUV, 2011
7	State Party State of Conservation Report, February 2012
8	UNEP-WCMC Information sheet, 2012